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Pesticide Fact Sheet Number 45: Demeton

(U.S.) Environmental Protection Agency
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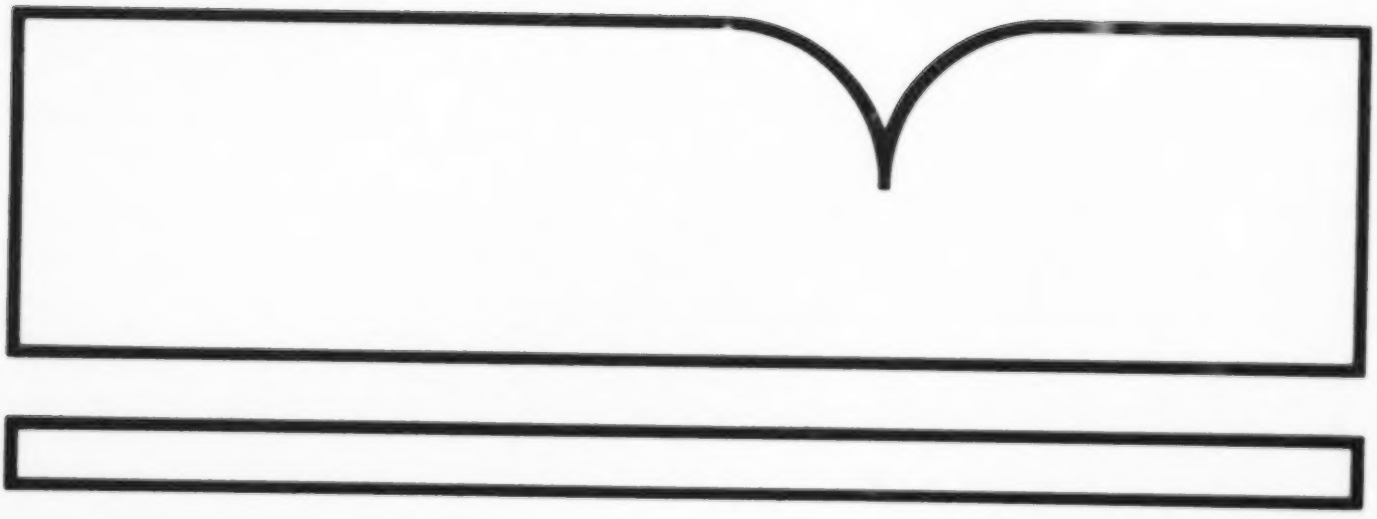

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

This document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. A Fact Sheet is issued after one of the following actions has occurred.

1. Issuance or reissuance of a registration standard,
2. Issuance of each special review document,
3. Registration of a significantly changed use pattern,
4. Registration of a new chemical, or
5. An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

17. Document Analysis a. Descriptors

Pesticides, regulations, Chemical Information Fact Sheet, Use Patterns, Science Findings

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

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United States
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Office of Pesticides and Toxic Substances
Office of Pesticide Programs (TS-766C)
Washington, DC 20460

EPA

Pesticide Fact Sheet

Name of Chemical: DEMETON
Reason for Issuance:
Date Issued: Febuary 27, 1985
Fact Sheet Number: 45

1. Description of chemical

Chemical Name: Mixture of 2 isomers consisting of:
0,0-diethyl 0-[2(ethylthio) ethyl] phosphorothioate and
0,0-diethyl S-[2ethylthio)ethyl] phosphorothioate.
Common Names: Demeton-0 + Demeton-S, mercaptophos and
mercaptophos teolevy (USSR)
Trade Name: Systox ®
EPA Shaughnessy No: 057601
Chemical Abstracts Service (CAS) Number: 8065-48-3
Year of inital registration: July 15, 1955
Pesticide type: systemic acaricide/insecticide
Chemical family: organophosphate
U. S. Producer: Mobay Chemical Corporation

2. Use Patterns and formulations

Application sites: vegetable, field, orchard, and ornamental
(including greenhouse).
Types of formulations: liquid and granular
Types/methods of application: ground or air.

3. Science Findings

Chemical characteristics: light brown liquid; odor characteristic of sulfur compounds; soluble in most organic solvents; subject to hydrolysis under alkaline conditions; molecular weight: 258.32.

Toxicity characteristics: Toxicity Category I by dermal route of exposure (14mg/kg for male rats and 8.2 mg/kg for female rats; Toxicity Category I by the oral route of exposure (6.2 mg/kg for male rats and 2.5 mg/kg for female rats); positive in mutagenicity studies in vitro in cells; data gaps exist in the area of neurotoxicity; chronic toxicity, oncogenicity, teratogenicity, and reproduction. A gene mutation assay in mammalian cells in culture and a chromosome aberration assay in vivo are required to be performed to assess the mutagenic potential of demeton.

Physiological and Biochemical Behavioral Characteristics: readily absorbed and translocated by plants; cholinesterase inhibitor.

Environmental Characteristics: no data are available to assess the environmental fate of demeton; no data are available to assess demeton's potential for contaminating groundwater.

Ecological Characteristics: highly toxic to birds (7.19 mg/kg for mallard duck and 8.21 mg/kg for pheasant); highly toxic to fish (0.1 ppm for bluegill sunfish and 0.6 ppm for rainbow trout); very highly toxic to freshwater invertebrates (0.014 ppm for daphnia pulex); special tests to monitor the residues of demeton on avian feed items and aquatic sites are required; interim labeling to protect endangered species to be imposed in time for the 1986 growing season if the generic (cluster) analysis has not been completed.

Efficacy review results, where conducted: NA

Tolerance assessments: refer to the attached table for the list of current tolerances established for demeton; available data are not sufficient to conduct a full tolerance assessment.

4. Summary of Regulatory Position and Rationale

Use classification: all end-use products containing demeton shall continue to be classified for restricted use.
Formulation or geographical restrictions: none
Unique warning statements required on labels: end-use (EP) products require the use of protective clothing, rubber gloves, rubber overshoes and goggles; reentry of 48 hours, and a crop rotation restriction.

5. Summary of Major Data Gaps:

		Date Due
Toxicology:		
82-1	90-Day Feeding-Rodent, Non-rodent	June, 1986
	90-Day Feeding-Rat-Thiol Sulfoxide	January, 1986
82-2	21-Day Dermal Toxicity-Rabbit	August, 1985
81-7	Delayed Neurotoxicity-Hen	August, 1985
83-1	Chronic Toxicity	March, 1985
83-2	Oncogenicity	December, 1987
83-3	Teratogenicity	December, 1985

83-4	Reproduction	December, 1987
84-2	Gene Mutation Assay in Mammalian Cells in Culture	August, 1985
	Chromosome Aberration Assay *in vivo*	August, 1985
85-1	General Metabolism	March, 1986

Environmental Safety:

70-1	Special Test - Monitoring of residues on avian feed items	September, 1986
70-1	Special Test - Monitoring of residues in aquatic sites	September, 1986
70-3	Acute Toxicity to Estuarine and Marine Organisms	September, 1986

Environmental Fate:

161-1	Hydrolysis	March, 1985
161-2	Photodegradation in Water	March, 1985
161-3	Photodegradation in Soil	March, 1985
161-4	Photodegradation in Air	August, 1985
162-1	Aerobic Soil Metabolism	June, 1986
162-2	Anaerobic Soil Metabolism	June, 1986
162-3	Anaerobic Aquatic Metabolism	June, 1986
163-1	Leaching and Adsorption Desorption	March, 1985
163-2	Volatility (Lab)	August, 1985
164-1	Soil Dissipation	June, 1986
164-3	Forestry	March, 1987
165-1	Rotational Crops (Confined)	March, 1987
165-2	Rotational Crops (Field)	March, 1988
165-4	Accumulation in Fish	February, 1988
132-1	Reentry Data	March, 1988
201.1	Droplet Size Spectrum Testing and Drift Field Evaluation	February, 1987

Residue Chemistry:

171-4	Residues in Livestock	February, 1987
171-4	Residues Analytical Method	February, 1987
171-4	Storage Stability	February, 1987
171-4	Residue Data on Crops	February, 1987

Product Chemistry:

61-2	Descripton of Beginning Materials and Manufacturing Process	March, 1985/ August, 1985
61-3	Discussion of the Formation of Impurities	-do-

62-1	Preliminary Analysis	March, 1985/ August, 1985
62-2	Certification of Ingredient Limits	-do-
62-3	Analytical Methods to Verify Certified Limits	-do-
63-_	Physical/Chemical Properties	-do-

6. Contact Person at EPA:

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